



G H RAISONI COLLEGE OF ENGINEERING AND MANAGEMENT WAGHOLI PUNE

(An Autonomous Institute under UGC Act 1956 & Affiliated to Savitribai Phule Pune University)

Domkhel Road , GAT No.: 1200 Wagholi, Pune – 412207

Course wise Teaching Plan for Session : Summer 2019

Course : MATERIALS ENGINEERING

Faculty : vishal.patil@raisoni.net - VISHAL SURESH PATIL

Unit	Topic Code	Topic Covered	Date	Course	Section
1	1	Introduction to Basic Terms (System, Phase, Variables, and Components Etc.) related to equilibrium diagram.	03/12/2018	BMEL203	B
1	2	Alloys and solid solutions, compounds. Polymorphism, HumeRuther rules Time Temperature cooling curves,	04/12/2018	BMEL203	B
1	3	Construction of equilibrium diagrams using cooling curves, Binary phase diagrams Iso amorphous systems.	05/12/2018	BMEL203	B
1	4	Metallic systems completely miscible in liquid state and completely immiscible in solid-state Lever rule.	10/12/2018	BMEL203	B
1	5	equilibrium cooling	11/12/2018	BMEL203	B
1	6	Microstructures under equilibrium cooling conditions	12/12/2018	BMEL203	B
1	7	Eutectic, Hyper alloys and their applications.	17/12/2018	BMEL203	B
1	8	hypoeutectic alloys and their applications	18/12/2018	BMEL203	B
2	9	Plain Carbon Steel and Alloy Steels.	19/12/2018	BMEL203	B
2	10	Invariant reactions ,microstructure under equilibrium cooling condition	24/12/2018	BMEL203	B
2	11	Purpose of alloying, Different alloying elements and their effect on enhancing the different characteristics,	01/01/2019	BMEL203	B
2	12	Tool steels, Stainless steel, spring steel, designation.	02/01/2019	BMEL203	B
2	13	Cast iron, White cast iron, Maurer Diagram, malleable cast iron, malleablizing cycle	07/01/2019	BMEL203	B
2	14	Grey cast iron, Types of grey cast iron	08/01/2019	BMEL203	B
2	15	Nodular cast iron., Alloy cast iron, Microstructure, properties and application of every cast iron	09/01/2019	BMEL203	B
3	16	Introduction & Classification of Materials, Definitions.	14/01/2019	BMEL203	B
3	17	Classification & characteristics of polymers, Types of polymerization, Polymer processing.	15/01/2019	BMEL203	B
3	18	Elastomers, properties and applications of engineering polymers.	16/01/2019	BMEL203	B



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3	19	Properties, processing and applications of ceramic materials (WC, TIC, Al ₂ O ₃), Cermets.	21/01/2019	BMEL203	B
3	20	Composite materials, Classification & Types of composite, Properties & applications.	28/01/2019	BMEL203	B
3	21	Metal matrix composite, Ceramic matrix composite, Fiber Reinforced plastic.	29/01/2019	BMEL203	B
3	22	Introduction to Plastics, Types, Applications. Numerical based on composite (isostress&isostrain conditions).	30/01/2019	BMEL203	B
4	23	Introduction, importance of heat treatment	04/02/2019	BMEL203	B
4	24	Basic heat treatments such as annealing, normalizing, hardening and tempering, procedure	05/02/2019	BMEL203	B
4	25	allied phases - martensite, retained austenite etc related properties, and microstructure and their co-relation.	06/02/2019	BMEL203	B
4	26	TTT diagram, construction, heat treatment based on it.	11/02/2019	BMEL203	B
4	27	Industrial application of different heat treatment	12/02/2019	BMEL203	B
4	28	process jominy end quench test.	13/02/2019	BMEL203	B
4	29	Surface Treatments based on above such as Induction hardening.	25/02/2019	BMEL203	B
5	30	Brief introduction to different nonferrous materials	26/02/2019	BMEL203	B
5	31	study of the Aluminum and its alloy, eg. Aluminium Silicon, related phase diagram	27/02/2019	BMEL203	B
5	32	Na modification Copper and its alloys.	04/03/2019	BMEL203	B
5	33	Introduction to nano materials,	05/03/2019	BMEL203	B
5	34	Smart materials	06/03/2019	BMEL203	B
5	35	high temperature smart materials, properties and relevant applications.	11/03/2019	BMEL203	B



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6	36	Need of testing, Destructive and nondestructive testing Mechanical testing	12/03/2019	BMEL203	B
6	37	Tensile test, Impact test Izod and Charpy	13/03/2019	BMEL203	B
6	38	test Hardness measurement, Rockwell , Brinell hardness, micro hardness.	18/03/2019	BMEL203	B
6	39	Magnetic particle inspection.	19/03/2019	BMEL203	B
6	40	applications of hardness testing.	20/03/2019	BMEL203	B
6	41	Advanced testing Methods	25/03/2019	BMEL203	B
6	42	NUMERICALS	26/03/2019	BMEL203	B